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CLAIMS

1. An apparatus for transporting dry powder from an external bulk powder source to a dose filling tool during volumetric filling of metered doses, the apparatus is **characterized by**

5 a feeding chamber device having at least one inlet adapted for receiving portions of dry powder from the external bulk powder source and at least one outlet adapted for dispensing powder to the dose filling tool;

an internal volume of the feeding chamber device is designed to hold a limited amount of powder representing a limited number of doses, and the
10 feeding chamber device is designed to be replenished intermittently with powder from the external bulk powder source for maintaining a level of powder in the internal volume within specified limits over many cycles of volumetric dose filling;

the feeding chamber device and the dose filling tool are arranged to be
15 movable in relation to each other while the at least one outlet of the feeding chamber device is forcibly in contact with a surface of the dose filling tool during the relative movement, the relative movement providing shearing and frictional forces on a pillar of powder in the internal volume of the feeding chamber device, thereby assisting in providing a coherent plug of powder
20 within the feeding chamber device; and

the feeding chamber device constitutes an independent, intermediate device, separating the bulk powder source from the dose filling tool.

2. The apparatus according to claim 1, **characterized in** that

25 the feeding chamber device comprises at least one energizable member, when energized capable of collapsing a body of powder in the feeding chamber device into a homogeneous plug of powder and separating the plug of powder from having generally contact with the inner surface of the feeding chamber device.

3. The apparatus according to claim 3, **characterized in** that

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the energizable member comprises at least one scraper member movable relative the feeding chamber device.

4. An apparatus for volumetric production of doses of dry powder, the
5 apparatus is **characterized by**

a bulk powder source containing the powder and comprising means for releasing portions of the powder;

a feeding chamber device comprising at least one inlet adapted for receiving portions of powder from the bulk powder source and at least one
10 outlet adapted for dispensing powder to at least one powder metering receptacle of the dose filling tool;

the dose filling tool and the at least one outlet of the feeding chamber device are arranged for being movable in relation to each other such that the at least one outlet of the feeding chamber device is forcibly in contact with a
15 surface of the dose filling tool during the relative movement; and

air suction means adapted for applying air suction power to fill the at least one metering receptacle with a dose of the powder when the at least one outlet of the feeding chamber device crosses the at least one metering receptacle during the relative movement,

20 wherein the feeding chamber device constitutes an independent, intermediate device, separating the bulk powder source from the dose filling tool.

5. The apparatus according to claim 4, **characterized in** that the surface
25 of the dose filling tool comprising the at least one metering receptacle is plane.

6. The apparatus according to claim 4, **characterized in** that a filter is applied to the at least one metering receptacle such that powder particles are
30 not lost to air being sucked during filling of the at least one metering receptacle.

7. The apparatus according to claim 6, **characterized in** that the filter is a woven filter.

5 8. The apparatus according to claim 4, **characterized in** that the mechanical strength of the filter is re-enforced by arranging at least one of a supporting wire netting at one or optionally both sides of the filter or a supporting sintered filter at one or optionally both sides of the filter.

10 9. The apparatus according to claim 4, **characterized in** that a spring force is applied to keep contact pressure between an air nozzle, the filter and an opening of the at least one metering receptacle for sucking air, such that elastic seals sealing the nozzle, the filter and at least one metering receptacle will stop leakage of air and powder into and out of the at least one metering receptacle.

15 10. The apparatus according to claim 4, **characterized in** that a source of electric charges is arranged in an air gap between the dose filling tool and a dose container, such that electrically charged particles in an ejected powder load become electrically neutralized while being transferred from at least one
20 metering receptacle to the dose container.

25 11. The apparatus according to claim 4, **characterized in** that sources of electric charges are arranged at a working distance to the bulk powder source and optionally at a working distance to the powder in the feeding chamber device and to the dose filling tool in order to electrically neutralize electrostatic charges of the powder and the apparatus.

30 12 The apparatus according to claim 4, **characterized by** air pressure means adapted for applying air pressure power to eject a metered dose of powder from the at least one metering receptacle when the receptacle is in a position for emptying into a dose container.

13. A method of transporting dry powder from an external bulk powder source to a dose filling tool during volumetric filling of metered doses, **characterized by:**

5 intermittently feeding a portion of powder from the external bulk powder source to a feeding chamber device through at least one inlet of the feeding chamber device, the feeding chamber device being designed for containing a limited amount of powder representing a limited number of doses, and comprising at least one outlet adapted for dispensing powder to the dose filling tool; and

10 providing a relative movement between the feeding chamber device and the dose filling tool while the at least one outlet of the feeding chamber device is in forcible contact with a surface of the dose filling tool during the relative movement, the relative movement providing shearing and frictional forces on a pillar of powder in the feeding chamber device, thereby assisting
15 in providing a coherent plug of powder within the feeding chamber device,

wherein the feeding chamber device constitutes an independent, intermediate device, separating the external bulk powder source from the dose filling tool and transporting the dry powder from the external bulk powder source to the dose filling tool.

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14. The method according to claim 13, **characterized by** the further step of energizing at least one energizable member in the feeding chamber device, when energized capable of collapsing a body of powder in the feeding chamber device into a homogeneous plug of powder and generally separating
25 the body of powder from having contact with the inner surface of the feeding chamber device.

15. The method according to claim 14, **characterized in** that the at least one energizable member comprises at least one scraper member movable
30 relative the inside of the feeding chamber device.

16. A method of producing volumetric doses of dry powder, **characterized by:**

intermittently replenishing as required a portion of powder from a bulk powder source to at least one inlet of a feeding chamber device;

5 providing a relative movement between the feeding chamber device and a dose filling tool comprising at least one powder metering receptacle such that at least one outlet of the feeding chamber device crosses the at least one metering receptacle in such a way that the at least one outlet is in forcible contact with a surface of the dose filling tool; and

10 applying air suction power to fill the at least one metering receptacle with a dose of the powder from the feeding chamber device when the at least one outlet of the feeding chamber device crosses the at least one metering receptacle,

15 wherein the feeding chamber device constitutes an independent, intermediate device, separating the bulk powder source from the dose filling tool and the applied air suction to the metering receptacle.

17. The method according to claim 16, **characterized in** that the surface of the filling tool is plane.

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18. The method according to claim 16, **characterized by** the further step of applying a filter to the at least one metering receptacle such that powder particles are not lost to air being sucked during filling of the receptacle.

25 19. The method according to claim 16, **characterized by** the further step of re-enforcing the mechanical strength of the filter by arranging at least one of a supporting wire netting at one or optionally both sides of the filter or a supporting sintered filter at one or optionally both sides of the filter.

30 20. The method according to claim 16, **characterized by** the further step of applying a spring force to obtain contact pressure between an air nozzle, the filter and an opening of the at least one metering receptacle for sucking

air, such that elastic seals sealing the nozzle, the filter and the at least one metering receptacle will stop leakage of air and powder into and out of the receptacle.

5 21. The method according to claim 16, **characterized by** the further step of arranging a source of electric charges in an air gap between the filling tool and a dose container, such that electrically charged particles in an ejected powder load become electrically neutralized while being transferred from the at least one metering receptacle to the dose container.

10 22. The method according to claim 16, **characterized by** the further step of arranging sources of electric charges at a working distance to the bulk powder source and optionally at a working distance to the powder in the feeding chamber and to the filling tool in order to accomplish that
15 electrostatic charges of the powder and the apparatus become electrically neutralized such that the filling process is not adversely affected.

23. The method according to claim 16, **characterized by** the further step of
20 applying air pressure powder to eject a metered dose of powder from the at least one metering receptacle when the receptacle is in a position for emptying into a dose container.

24. The method according to claim 16, **characterized in** that a mass target of the doses is in arrange of 100 μg – 50 mg, and preferably in a range of 100
25 μg – 10 mg and most preferably in a range of 100 μg – 5 mg.

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